Original Article / Özgün Makale

MEDICINE PALLIATIVE CARE

DOI: 10.47582/jompac.1172802

J Med Palliat Care 2022; 3(4): 317-321

Evaluation of laparoscopy results for the patients with chronic pelvic pain

Kronik pelvik ağrılı hastalarda laparoskopi sonuçlarının değerlendirilmesi

Asena Ayar Madenli[1], Halime Çalı Öztürk[2]

[1]Liv Hospital Vadistanbul, Department of Obstetrics and Gynecology, Istanbul, Turkey
[2]Bezmialem University, Department of Obstetrics and Gynecology, Istanbul, Turkey

Cite this article as: Ayar Madenli A, Çalı Öztürk H. Evaluation of laparoscopy results for the patients with chronic pelvic pain. J Med Palliat Care 2022; 3(4): 317-321.

ABSTRACT

Aim: The study aims to retrospectively evaluate the laparoscopy results of patients who underwent laparoscopy with chronic pelvic pain (CPPS) diagnosis in two groups of fertile and infertile patients.

Material and Method: This retrospective study examined the electronic records of 170 patients who underwent laparoscopy due to CPPS were included in the study. The patients were divided into two groups: the CPPS and unexplained infertility group (n: 87) as the case group and the CPPS fertile group (n: 83) as the control group. Women aged 25-40 years with unexplained infertility and CPPS were included in the study.

Results: Results found a statistically significant association between infertility in women and laparoscopy results ($p<0.001$). There was no statistically significant association between infertility in women and symptoms ($p>0.05$). There was no statistically significant association between women's infertility and smoking status ($p>0.05$). Mann-Whitney test did not find a statistically significant association between case and control regarding age and body mass index (BMI) ($p>0.05$). There was a statistically significant difference between groups in terms of the duration of pain ($p<0.05$). The duration of pain in the case group ($M=5.34$; $SD=1.67$) was higher than the duration of pain in controls ($M=4.8$; $SD=1.72$).

Conclusion: Results showed that the duration of pain in the infertile group was significantly higher than in the fertile group, which could mainly be attributed to endometriosis.

Keywords: Laparoscopy, chronic pelvic pain, infertility

ÖZ

Amaç: Çalışmamız, kronik pelvik ağrı (KPAS) tanısı ile laparoskopi yapılan hastaların laparoskopi sonuçlarını fertil ve infertil olmak üzere iki grupta retrospektif olarak değerlendirmeyi amaçlamaktadır.

Gereç ve Yöntem: Bu retrospektif çalışmada, KPAS nedeniyle laparoskopi yapılan 170 hastanın elektronik kayıtları incelendi. Hastalar vaka grubu olarak KPAS ve açıklanamayan infertilite grubu (n: 87) ve kontrol grubu olarak KPAS fertil grubu (n: 83) olmak üzere iki gruba ayrıldı. 25-40 yaş arası açıklanamayan infertilite ve KPAS olan kadınlar çalışmaya dahil edildi.

Bulgular: Kadınlarda infertilite ile laparoskopi sonuçları arasında istatistiksel olarak anlamlı bir ilişki buldu ($p<0,001$). Kadınlarda infertilite ile semptomlar arasında istatistiksel olarak anlamlı bir ilişki yoktu ($p>0,05$). Kadınların infertilitesi ile sigara içme durumu arasında istatistiksel olarak anlamlı bir ilişki yoktu ($p>0,05$). Mann-Whitney testi, yaş ve vücut kitle indeksi (VKİ) açısından olgu ve kontrol arasında istatistiksel olarak anlamlı bir ilişki bulmadı ($p>0,05$). Ağrı süresi açısından gruplar arasında istatistiksel olarak anlamlı fark vardı ($p<0,05$). Olgu grubundaki ağrı süresi ($Ort=5,34$; $SD=1,67$), kontrol grubundaki ağrı süresinden ($Ort=4,8$; $SD=1,72$) daha uzundu.

Sonuç: Sonuçlar, infertil grupta ağrı süresinin fertil gruptan anlamlı olarak daha yüksek olduğunu gösterdi ve bu durum esas olarak endometriozise atfedilebilir.

Anahtar Kelimeler: Laparoskopi, kronik pelvik ağrı, kısırlık

Corresponding Author/Sorumlu Yazar: Asena Ayar Madenli, Liv Hospital Vadistanbul, Department of Obstetrics and Gynecology, Istanbul, Turkey
E-mail/E-posta: asenaayar@yahoo.com.tr
Received/Geliş: 23.09.2022 **Accepted/Kabul:** 31.10.2022

This work is licensed under a Creative Commons Attribution 4.0 International License.

INTRODUCTION

Chronic pelvic pain (CPPS) is any pain in the pelvic area unrelated to pregnancy, menstruation, and sexual intercourse, which has lasted at least six months or more and has no known organic cause (1-3). Gynecological, urological, digestive, and musculoskeletal factors and psychological issues have been proposed as effective causes of this complication (3-5). The complexity of the variety of pelvic pain causes these patients not to receive a definitive diagnosis in more than 60% of cases, and this point is especially evident in the case of musculoskeletal factors (5-7). The prevalence of this pain in different societies, according to the characteristics of the studied society and the method of conducting the study, has been reported to be between 8.3-39% (7,8). Diagnosing and treating CPPS accounts for 10% of visits to obstetricians and gynecologists, 20% of all laparoscopies, and 12-16 hysterectomies, which in the United States cost over $2.8 billion per year (5). According to an estimate (8), 158 million pounds are spent annually on diagnosing and treating this condition in the British National Health Service. This pain affects women's daily activities and quality of life and negatively affects their mental and physical health (8,9).

Mak et al. (10) reported the prevalence of CPPS as 39% in a hospital-based study of 559 people. A study by Faul et al. (11) on 581 women showed that 39% had pelvic pain, 46 had painful intercourse, 9% had painful menstruation, and 12 had irritable bowel syndrome. Horne et al. (9) reported an annual incidence of CPPS in the UK of 38 cases per 1,000 women aged 15-73. In another study, among 3916 women aged 18-49 years, the prevalence of CPPS in the form of recurring pain with a fixed duration and at least six months unrelated to sexual intercourse, pregnancy and dysmenorrhea were reported as 24% (6). Argentino et al. (3) reported a study in New Zealand on 2,261 women aged 18-50 years that among the participants, the three-month prevalence of chronic pelvic pain was 25.4%, and about half of these women (47.7%) were undiagnosed. Singh et al. (12) showed that until that date, only 18 epidemiological studies were conducted on the frequency of non-periodic pelvic pain, which was reported as 1.2-24%. The studies conducted on the frequency of CPPS while expressing the importance and extent of the issue and the need to address it, indicate that there is still no consensus among researchers, even on the basic concepts and definition of CPPS, which causes dispersion in the findings of epidemiological studies. Therefore, the necessity of further investigations considering the diversity of demographic indicators in terms of the living environment, especially in developing societies, is raised.

Patients with unknown pelvic pain are a typical case of visiting the emergency room, which has always been a problem. These patients are hospitalized for several days without a diagnosis or by taking various radiographs, tests, sonography, and computed tomography scan, or even surgery without pathology, suffer a lot of cost and waste of time. Laparoscopy, a relatively less invasive new method, allows access to the entire abdominal and pelvic cavity except for the kidneys with multiple magnifications (5-7). This is a diagnostic and therapeutic method with a high percentage and can be an alternative to diagnostic laparotomy (13). The study aims to retrospectively evaluate the laparoscopy results of patients who underwent laparoscopy with the diagnosis of CPPS.

MATERIAL AND METHOD

The study was carried out with the permission of Bezmialem Vakıf University Non-interventional Clinical Research Ethics Committee (Date: 6/9/2022, Decision No: 2022/261). All procedures were carried out in accordance with the ethical rules and the principles of the Declaration of Helsinki. With the ethics committee approval, the data were scanned retrospectively using the hospital ınformation management system between December 2017-March 2022.

A total of 170 patients who underwent laparoscopy due to CPPS were included in the study. The patients were divided into two groups: the CPPS and unexplained infertility group (n: 83) as the case group and the chronic pelvic pain fertile group (n: 87) as the control group. Women aged 25-40 years with unexplained infertility and chronic pelvic pain were included in the study. Those with a previous history of laparoscopy, diagnosed with endometriosis, male infertility, tubal factor, or ovulatory dysfunction were excluded from the study.

The Visual Analogue Scale (VAS) measures pain intensity. The VAS consists of a 10cm line, with two endpoints representing 0 ('no pain') and 10 ('pain as bad as it could possibly be'). VAS scores were found in patient files and recorded.

Statistical Analysis

The Kolmogorov-Smirnov test was performed to check the normality, and the nonparametric tests were performed given the groups' non-normality before the statistical analyses. Mean and standard deviations (SD) were measured to check each continuous variable, including age, body mass index (BMI), the duration of pain, CA-125, VAS. The Mann-Whitney U test was performed to study the difference between the two groups. SPSS v22 was used for statistical analyses. A value of $p<0.05$ was accepted as statistically significant.

To calculate the sample size with the G-Power 3.1 program, two groups' total mean was measured based on the Mann-Whitney test with the power of 95%, effect size of 50%, and 0.05 type 1 error for at least 92 patients (11).

RESULTS

This study included one hundred seventy age-matched (32.46 ± 3.43) and BMI-matched (24.65±2.08) women. **Table 1** shows descriptive statistics of study parameters.

Table 1. Descriptive statistics of study parameters (n=170).

Study parameters	median (range)	mean ± SD
Age	32 (25-40)	32.46±3.43
BMI	25 (18.2-34)	24.65±2.08
The duration of pain (y)	5 (1-9)	5.06±1.71
CA-125 (U/mL)	25 (5-75)	27.91±13.69
Visual Analog Scale of pain	6 (4-9)	6.3±1.34

SD, standard deviation

The average pain duration in women was 5.06±1.71. The average CA-125 score in women was 27.91±13.69). The average women's VAS of pain score was 6.3±1.34). **Table 2** shows the comparison of laboratory findings of the nominal study parameters.

As stated in **Table 2**, the highest frequency of laparoscopy results in total was endometriosis (31.8%), adeomyosis(14.7%), adhesion (16.5%), ovarian cyst (12.9%), no pathology detected (7.1%), pelvic inflammatory disease (PID) (5.3%), hydrosalpenx (4.7%), myoma (3.5%), polycystic ovary syndrome (PCOS) (1.2%), tuboovarian abscess (1.2%), and tuberculosis (1.2%). As can be seen from **Table 2**, the highest frequency of symptoms in total was dysmenorrhea (35.3%), dyspareunia (32.9%), fever, weight loss, anorexia (9.4%), irregular cycles (8.2%), gastrointestinal (GIS) symptoms (5.9%), vaginal discharge (5.3%), and heavy menstrual bleeding (2.4%).

As stated in **Table 2**, a chi-square test found a statistically significant association between infertility in women and laparoscopy results (p<0.001). The Pairwise Z-Tests found that the ovarian cyst in women in the control group was significantly higher than in the case group. The Pairwise Z-Tests found that the Adhesion in women in the control group was significantly higher than in the case group. The Pairwise Z-Tests found that the hydrosalpenx in women in the case group was significantly higher than in the control group. The Pairwise Z-Tests found that the endometriosis in women in the case group was significantly higher than in the control group. The Pairwise Z-Tests found that the no pathology detected in patients in the control group was significantly higher than in the case group.

Table 2. Comparison of laparoscopy results of the nominal study parameters

Variables	Categories	Total	Case(n=83) n(%)	Control(n=87) n(%)	p
Laparoscopy result					<0.001*
	Ovarian Cyst	22(12.9)	2(9.09)	20(90.91)†	
	Adhesion	28(16.5)	8(28.57)	20(71.43) †	
	Hydrosalpinx	8(4.7)	7(87.5) †	1(12.5)	
	Adenomyosis	25(14.7)	14(56)	11(44)	
	Endometriosis	54(31.8)	41(75.93) †	13(24.07)	
	PCOS	2(1.2)	1(50)	1(50)	
	PID	9(5.3)	4(44.44)	5(55.56)	
	Myoma	6(3.5)	4(66.67)	2(33.33)	
	Tuboovarian abscess	2(1.2)	1(50)	1(50)	
	Tuberculosis	2(1.2)	0(0)	2(100)	
	No pathology detected	12(7.1)	1(8.33)	11(91.67) †	
History of previous surgery					0.032*
	Yes	81(47.6)	26(63.4)	15(36.6) †	
	No	89(52.4)	57(44.2) †	72(55.8)	
Cigarette					0.655*
	Yes	41(24.1)	41(50.6)	40(49.4)	
	No	129(75.9)	42(47.2)	47(52.8)	
Symptoms					0.428*
	Dyspareunia	56(32.9)	27(48.2)	29(51.8)	
	Dysmenorrhea	60(35.3)	33(55)	27(45)	
	Vaginal discharge	9(5.3)	2(22.2)	7(77.8)	
	Fever, weight loss, anorexia	16(9.4)	5(31.3)	11(68.8)	
	Irregular cycles	14(8.2)	7(50)	7(50)	
	GIS symptoms	10(5.9)	6(60)	4(40)	
	Heavy menstrual bleeding	4(2.4)	2(50)	2(50)	

*Pearson Chi-Square Test, † The Pairwise Z-Tests, PCOS: Polycystic ovary syndrome , PID: Pelvic inflammatory disease , GIS: Gastrointestinal symptoms

Table 2 shows that the history of previous surgery was significantly higher in the case group($p<0.05$). There was no statistically significant association between infertility in women and symptoms ($p> 0.05$). There was no statistically significant association between women's infertility and smoking status ($p> 0.05$). **Table 3** shows the comparison of laparoscopy results case and control groups on the numeric study parameters.

Table 3. Comparison of laparoscopy results of the numeric study parameters

Study parameters	Case (n=83) M±SD	Control (n=87) M±SD	p
Age	32.35±3.37	32.57±3.5	0.833
BMI	24.64±2.03	24.66±2.14	0.906
The duration of pain	5.34±1.67	4.8±1.72	0.037
CA-125	28.77±13.41	27.09±13.98	0.523
Visual Analog Scale of pain	6.05±1.3	6.54±1.34	0.019

M, Mean; N, number of subjects; BMI, body mass index; All variables were tested by a Mann-Whitney U test.

As stated in **Table 3**, a Mann-Whitney test did not find a statistically significant association between case and control regarding age and BMI ($p>0.05$). There was a statistically significant difference between groups in terms of the duration of pain ($p<0.05$). The duration of pain in the case group 5.34±1.67 was higher than the duration of pain in controls 4.8±1.72.

There was a statistically significant difference between groups regarding the CA-125 ($p>0.05$). The mean CA-125 score in case group 28.77±13.41 was comparable to controls 27.09±13.98. There was a statistically significant difference between the case group and controls regarding the VAS ($p<0.05$). The VAS in the case group 6.05±1.3) was lower than controls 6.54±1.34.

DISCUSSION

The present study investigated the laparoscopy results of two fertile and infertile groups with CPPS. The results showed that the duration of pain in the infertile group was significantly higher than in the fertile group. The findings of this study are consistent with previous studies (7-9, 13-16). Sallis et al. (17), in a similar study, pointed out the positive relationship between infertility and CPPS. Also, the studies in this field generally prefer laparoscopy over the laparotomy method due to fewer complications and injuries (13-16).

Since endometriosis was a known pathology in more than 75% of the participants in the infertile group, endometriosis can be introduced as one of the leading causes of CPPS in infertile patients. Pain is a serious concern for women with endometriosis and may affect the quality of life in various ways. More than 50% of women with endometriosis suffer from pain during intercourse (dyspareunia) (10,18). In our study, 32.9% of the participants suffered from dyspareunia. Several studies show a correlation between dyspareunia and uterosacral or rectovaginal endometriosis (10,13-16,18-20).

According to studies, psychological factors, along with physical causes, which cause chronic pelvic pain, affect the differential diagnosis of this disease. The psychological factors, such as the quality of sleep, the existence of stressful factors, anxiety, and depression, and the physical factors, such as sexual abuse experience and sexual complications, such as decreased sexual desire, painful intercourse, and orgasm problems, are the mentioned causes of CPPS (19,20). According to the studies, psychological factors sometimes make a person prone to CPPS or are involved in accelerating the illness and pushing the illness towards its chronicity (21,22).

The present study showed a significant relationship between infertility, endometriosis, and dyspareunia. Painful intercourse can cause anxiety and fear of pain, aggravate spasms of pelvic floor muscles, and as a result, cause CPPS (22). Also, endometriosis, similar to pain, has an effect on people's mental states and personalities (21). Previous studies have shown that endometriosis negatively affects a person's self-image and causes loss of physical strength and fertility (17,22,23). Mothers who have daughters are concerned that their daughters may develop endometriosis in the future and suffer from pain and infertility (17). It should be noted that not only the pain caused by endometriosis but also the emotional problems associated with this disease, such as feelings of guilt and distress at work, are effective on the quality of life, and all these cases can be effective in aggravating CPPS (12,24).

Although, according to the general definition, CPPS is defined as pain with no structural cause (13), in some sources, endometriosis, adhesions, irritable bowel syndrome, and interstitial cysts have been proposed as four common causes of this complication (12). In the present study, 35.3% of the studied women suffered from dysmenorrhea, which was significantly higher in the infertile group. These findings were consistent with the findings of previous studies (8,12,16-18, 21). Also, there was a significant correlation between the history of surgery between the two groups with CPPS, which is consistent with previous studies (24,25).

Since all the people participating in this study were selected retrospective, the above findings can be limited to the study community's scope. Comparative and community-based studies with more samples are recommended for more accurate conclusions about the findings based on geographical differences.

CONCLUSION

The present study results showed that the duration of pain in the infertile group was significantly higher than in the fertile group, which could mainly be attributed to endometriosis. In order to reach a definitive diagnosis and plan the treatment, laparoscopy is necessary to investigate the etiology of CPPS in cases where no pathology is detected by pelvic examination and ultrasonography.

ETHICAL DECLARATIONS

Ethics Committee Approval: The study was carried out with the permission of Bezmialem Vakıf University Non-interventional Clinical Researches Ethics Committee (Date: 6/9/2022, Decision No: 2022/261).

Informed Consent: Because the study was designed retrospectively, no written informed consent form was obtained from patients.

Referee Evaluation Process: Externally peer-reviewed.

Conflict of Interest Statement: The authors have no conflicts of interest to declare.

Financial Disclosure: The authors declared that this study has received no financial support.

Author Contributions: All of the authors declare that they have all participated in the design, execution, and analysis of the paper, and that they have approved the final version.

REFERENCES

1. Abdelsattar AA, Nossir WS, Elsayed YA. Value of laparoscopy in diagnosis of endometriosis in unexplained infertility cases. ZUMJ 2020. doi: 10.21608/zumj.2020.16275.1460
2. Gawad Hadwa IMA, Raof Farahat MA, Saeed Dawood AE, Al Ahwal LM. Laparoscopic assessment of the tubo ovarian relationship in unexplained infertility. JAMMR 2022: 34: 86-98.
3. Argentino GLS, Bueloni-Dias FN, Leite NJ, et al. The role of laparoscopy in the propaedeutics of gynecological diagnosis1. Acta Cir Bras 2019; 34: e20190010000010.
4. Gokmen Karasu AF, Ates S, Gurbuz T, Sahin N, Takmaz T, Aydin S. A clinico-pathological study of transvaginal endometrial thickness measurement in asymptomatic postmenopausal patients and patients with postmenopausal bleeding. Gynecol Obstet Reprod Med 2019; 25: 85-8.
5. Raees HB. Critical analysis of laparoscopic diagnosis in gynecology: new era in healthcare. CMRO 2021: 4; 961-6.
6. El-flahgy MMM, El-Bassioune WM, Ayad WA. Incidence of endometriosis among women prepared for laparoscopy in unexplained infertility and chronic pelvic pain. IJMA 2020: 2; 519-27.
7. Gratton SM, Choudhry AJ, Vilos GA, et al. Diagnosis of endometriosis at laparoscopy: a validation study comparing surgeon visualization with histologic findings. J Obstet Gynaecol Can 2022; 44: 135-41.
8. Harris A, McCaughey T, Tsaltas J, et al. Endometriosis-related pelvic pain following laparoscopic surgical treatment. JEPPD 2020; 12: 151-7.
9. Horne AW, Daniels J, Hummelshoj L, Cox E, Cooper KG. Surgical removal of superficial peritoneal endometriosis for managing women with chronic pelvic pain: time for a rethink? BJOG 2019; 126: 1414-6.
10. Mak J, Leonardi M, Condous G. 'Seeing is believing': arguing for diagnostic laparoscopy as a diagnostic test for endometriosis. Reprod Fertil 2022; 3: 23-8.
11. Faul F, Erdfelder E, Buchner A, Lang AG. Statistical power analyses using G*Power 3.1: tests for correlation and regression analyses. Behav Res Methods 2009; 41: 1149-60.
12. Singh A, Pandey K, Arya S, Ahmad A. Role of interleukin-8 in predicting endometriosis in patients with chronic pelvic pain & infertility. Pain 2020; 39: 11.
13. Laguerre MD, Arkerson BJ, Robinson MA, Moawad NS. Outcomes of laparoscopic management of chronic pelvic pain and endometriosis. J Obstet Gynaecol 2022; 42: 146-52.
14. Dokuzeylül Güngör N, Gürbüz T, Demir MK, Yapıcıer Ö, Zer L,Sağıroğlu JŞ. Endometriosis in an Episiotomy Scar:Case Report. TJRMS 2018; 2: 30-4.
15. Koninckx PR, Ussia A, Keckstein J, Adamyan L, Wattiez A, Martin DC. Prevalence of Endometriosis and Peritoneal Pockets in Women with Infertility and/or Pelvic Pain. J Obstet Gynaecol Can 2021; 43: 935-42.
16. Okcu NT, Gürbüz T, Uysal G. Comparison of patients undergoing vaginal hysterectomy with sacrospinous ligament fixation, laparoscopic hysterectomy with sacrocolpopexy and abdominal hysterectomy with sacrocolpopexy in terms of postoperative quality of life and sexual function. J Gynecol Obstet Hum Reprod 2021; 50: 101977.
17. Salliss ME, Farland LV, Mahnert ND, Herbst-Kralovetz MM. The role of gut and genital microbiota and the estrobolome in endometriosis, infertility and chronic pelvic pain. Hum Reprod Update 2021; 28: 92-131.
18. Malhotra N, Singh UB, Iyer V, Gupta P, Chandhiok N. Role of laparoscopy in the diagnosis of genital tb in infertile females in the era of molecular tests. J Minim Invasive Gynecol 2020; 27: 1538-44.
19. McGuinness B, Nezhat F, Ursillo L, Akerman M, Vintzileos W, White M. Fallopian tube endometriosis in women undergoing operative video laparoscopy and its clinical implications. Fertil Steril 2020; 114: 1040-8.
20. Nuelly PMSS, Jostin BGR, Emery ELM, et al. Indication of laparoscopy in case of tubal infertility at the University Hospital of Brazzaville (Republic of Congo). J Gynecol Obstet 2022: 10; 120-5.
21. Panwar A, Lata K, Davis AA, Kriplani A. Spilled gallstones as an unusual cause of infertility: laparoscopic management. J Minim Invasive Gynecol 2020; 27: 1467-8.
22. Ploteau S, Merlot B, Roman H, Canis M, Collinet P, Fritel X. Endométriose minime à légère: résultats du traitement chirurgical sur la douleur et l'infertilité et modalités techniques. Quelles stratégies thérapeutiques? RPC Endométriose CNGOF-HAS [Minimal and mild endometriosis: Impact of the laparoscopic surgery on pelvic pain and fertility. CNGOF-HAS Endometriosis Guidelines]. Gynecol Obstet Fertil Senol 2018; 46: 273-7.
23. Ratan A, Pradhan S, Panigrahi PK, Sahu M, Peepal P, Das S. Role of laparoscopy in diagnosis and treatment of endometriosis associated with infertility: a prospective analysis. SMJ 2021: 73; 772–6.
24. Sun TT, Chen SK, Li XY, et al. Fertility outcomes after laparoscopic cystectomy in infertile patients with stage iii-iv endometriosis: a cohort with 6-10 years of follow-up. Adv Ther 2020; 37: 2159-68.
25. Thakral V, Garg S, Suren P. Evaluation of Endometriosis in Infertility: Incidence, Clinical Features, and Laparoscopic Findings. JMGUMST 2020: 5; 73-6.